

## REMARKS

### **Status of the claims**

Claims 1-11 are pending in this application, with claim 1 being in independent form.

### **The rejections under 35 U.S.C. § 102/103**

- Claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 1,978,278 to *O'Brien*.
- Claims 2-11 were rejected under 35 U.S.C. § 103(a) as being obvious from *O'Brien*.

Applicant submits that independent claim 1, together with the claims dependent therefrom, are patentably distinct from the cited references for at least the following reasons.

Claim 1 is directed to a device (1) for forming contraction joints in concrete works including a plurality of alternating members on either side of a superficial crack line situated on the upper side of the concrete surface. The members are constituted of trays (3, 3'; 12, 12') of a concrete divider material, and the device (1) comprises a plurality of trays (3, 3'; 12, 12') assembled on stiff linear members (7, 9, 11), leaving gaps (16) between them.

*O'Brien*, as understood by Applicant, relates to a joint for concrete slabs.

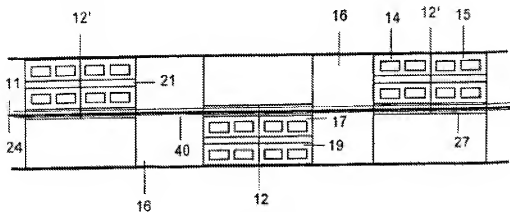
1. For at least the following reasons Applicant strongly disagrees with the statement in the paragraph bridging pages 4 and 5 of the Office Action that *“the structure of O'Brien meets the claimed limitations of the instant application and the crack that O'Brien repairs may be construed as a standard crack and since the structure of O'Brien meets the structure of the instant application, as claimed, O'Brien may operate in the same manner as noted in the action above.”*

1.1. One recitation of claim 1 that is not met by O'Brien is that the device for forming contraction joints includes a plurality of alternating members (the trays 3, 3', 12, 12') on either side of the superficial crack line situated on the upper side of the concrete surface. In O'Brien, the strips 11, 15, 12 are not situated alternately on either side of the superficial crack line but on the same side and therefore O'Brien cannot operate in a manner described particularly in the following paragraphs of the present application:

<p>[0047] As concrete cracks, the two slabs 50, 52 are formed with a different configuration in the areas corresponding to the alternating trays 12, 12', respectively.</p> <p>[0048] In the area corresponding to one tray 12 (FIG. 5a), the horizontal span 54 of slab 52 is situated above the horizontal span 53 of slab 50, and slab 52 is prevented by slab 50 from moving downwards.</p> <p>[0049] However, in the area corresponding to tray 12' (FIG. 5b), span 54' of slab 52 is situated under the horizontal span 53' of slab 50. Therefore, in this area slab 52 is prevented from moving upwards since the horizontal span of slab 50 is above it. Therefore the shear stresses are transmitted among the slabs and, generally, among the cracked members when the concrete works are other than pavements.</p> <p>[0050] On the other hand, the bending moments are also transmitted. If the area of the joint were to be raised up due to the effect of an internal load of the slab 50, span 53 will be higher than span 53' as it is farther from the load tending to sink the slab in the center and raising it up on the edge. According to FIG. 5b, span 53' is higher than span 54' of slab 52. In turn, span 54' raising up in slab 52 is higher than</p>	<p>span 54 as it is farther from the center of the slab 52. Therefore the order of the height or height level reached would be 53, 53', 54', 54. This is not possible since, by looking at FIG. 5a, portion 54 is above portion 53. For it to be above and below at the same time, they must be at the same height level. In other words, the line joining one support 53-54 with the other one 53'-54' is a line parallel to the horizontal (parallel to the surface). Therefore there is no turning between slabs 50 and 52, and the bending moments are transmitted.</p> <p>[0051] The horizontal portion 21 of the trays 12, 12' always works under compression, therefore its durability is ensured. It is recommended that it be this and/or that its elastic limit be high so that deformation thereof by compression is small and the transmission of loads is efficient. Any downward movement of a slab must be transmitted to the other one in the same magnitude; if the downward movement is identical, the transmission of loads efficacy is 100%. In tests carried out with the falling weight deflectometer, an almost perfect behavior is reflected in a total of 50 tested cracks (mean greater than 99%, and no movement below 93%).</p>
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For a better understanding of this fundamental difference between the claimed invention and O'Brien, a detailed explanation follows.

In reference to the following Fig. 3b of the present application



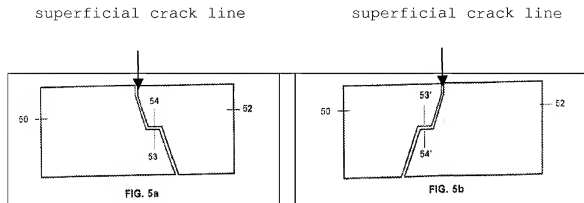
**FIG. 3b**

it is stated in the application:

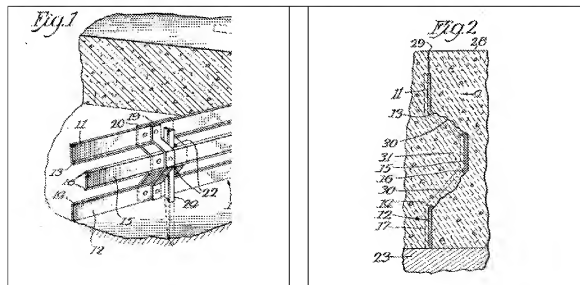
[0033] In reference to FIGS. 3a and 3b, a device 1 for forming joints with trays 12, 12' alternately arranged on either side of the superficial crack line 24 (coinciding with the stiff linear member 11) with gaps 16 between them, can be seen. The trays 12 and 12' are formed by pairs of half-trays 14, 15, which are equal with the exception that each of them is solidly joined to the triangular support 31 at a different end, and they are assembled on stiff linear members 7 and 9 which are made to pass through the orifices 35 and 37 of the supports 30, 31 and through the conduit 25 of the trays 15.

Then, trays 12 are situated on the right side of the superficial crack line 24 and trays 12' are situated on the left side of the superficial crack line 24. Trays 12, 12' are then "a plurality of alternating members on either side of a superficial crack line" as recited in claim 1.

A tray 12 (on the right side) will induce the joint between adjacent slabs shown in Fig 5a and a tray 12' (on the left side) will induce the joint between adjacent slabs shown in Fig 5a.



In O'Brien the joint forming member, comprising a pair of flap strips 11, 12 lying in the same vertical plane and an intermediate strip 15 offset from the plane including strips 11, 12, is placed always on one side of the superficial crack line 29 (the right side in all the Figures of O'Brien) and therefore will induce the same right-side oriented joint between adjacent slabs as shown in Fig. 2 along the superficial crack line 29.



1.2. Another recitation of claim 1 that is not met by O'Brien is that the device for forming contraction joints comprises a plurality of trays 3, 3'; 12, 12' assembled on stiff linear members (7, 9, 11), leaving gaps (16) between them.

In the claimed application, the device comprises a plurality of a trays placed alternately on either side of the superficial crack line (as illustrated above). A tray 3, 3'; 12, 12' is therefore an element for forming the joint along the section of the superficial crack line where it is placed. As they are separate members there can be gaps (16) between them.

In O'Brien, a joint forming member is constituted by the strips 11, 12, 15. The individual strips 11, 12, 15 are not joint forming separate members and consequently cannot be compared with the trays 3, 3'; 12, 12' of the claimed application.

On the other hand, in O'Brien there are not gaps between two joint forming members. They shall be connected between them by means of a band 19, i.e. without leaving any gap between them, as it is clearly illustrated in Fig. 1.

For at least the foregoing reasons, claim 1 is seen to be clearly allowable over O'Brien.

#### The dependent claims

The other claims in this application are each dependent from independent claim 1 discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested. Applicant has the following comments in particular on the dependent claims.

## 2. Claim 2

In the Office Action it stated on page 3 that O'Brien "*discloses the trays as having flat portion but does not particularly disclose the angle they are set in regards to the concrete.*"

However, it is clear that O'Brien discloses flat strips 11, 12 which are placed in a vertical plane with regard to the upper side of the concrete surface. Strip 15 is also placed in a vertical plane (see Figs 1 and 2 above).

As clearly recited in claim 2 the flat area 21 of trays 12, 12' in the claimed application is defined as tilted an angle comprised between 1 and 15° with regard to the upper side of the concrete surface, i.e. almost a horizontal flat area.

Said flat area 21 is intended to generate the surfaces 53, 54; 53', 54' shown in Figures 5a and 5b (see above) with the effects explained from paragraph [0047] to paragraph [0051] of the published application (see above) where it is clearly justified that such not an obvious design choice.

## 3. Claim 3

As already stated the O'Brien individual strips 11, 12, 15 cannot be compared with the trays 3, 3'; 12, 12' of the claimed application. The same reasoning applies to the semi-trays 14, 15. It is to be noted in any case that the O'Brien element 19 quoted in the Office Action is a band for connecting two joint forming members, i.e., clarifying that they are not individual comparable members to the trays 3, 3'; 12, 12' and the semi-trays 14, 15.

Regarding the claimed angles it is to be noted that O'Brien disclose flat strips 11, 12 which are placed in a vertical plane with regard to the upper side of the concrete surface (see Figs

1 and 2 above) and that the claimed angled are intended to generate the joints shown in Figures 5a and 5b (see above), which are different than the O'Brien joint shown in Fig. 2.

#### 4. Claim 4

The claimed supports 30, 31 of trays 12, 12', with orifices 35, 37 that are simply passage means for the stiff linear members 7, 9 that are extended horizontally and parallel to the superficial crack line 24 are means for supporting the trays 12, 12' over the ground and, therefore, cannot be compared with the seats 21 and apertures 22 in O'Brien that belong to the vertically oriented tie band 20 used for connecting two joint forming members.

#### 5. Claim 5

The claimed conduit 25 for the stiff linear members 7, 9 that are extended horizontally and parallel to the superficial crack line 24, cannot be compared with the apertures 22 in O'Brien that belong to the vertically oriented tie band 20 used connecting two joint forming members.

#### 6. Claim 6

The claimed openings 22 (see Fig. 2) cannot be compared with the apertures 26 in O'Brien provided for receiving reinforcing dowels 27 that extend transversely of the joint forming member.

7. Claims 7, 8, 11

The quoted joint 19 in O'Brien is a vertical band for connecting two joint forming members. It is therefore completely different than the claimed waterproofing joint 40 extended horizontally over the upper portion 27 of the trays 12, 12'.

8. Claims 9, 10

See the above remarks regarding claims 4 and 7.

### **Conclusion**

In view of the foregoing Remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Respectfully Submitted

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